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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,439	07/05/2001	Tue Nguyen	SIM077	1885

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EXAMINER

HOANG, QUOC DINH

ART UNIT	PAPER NUMBER
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2818

DATE MAILED: 07/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/898,439	Applicant(s) NGUYEN ET AL.	
	Examiner Quoc D. Hoang	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 21-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 30 and 38 is/are allowed.
- 6) ☒ Claim(s) 1-16, 21-29, 31-34 and 37 is/are rejected.
- 7) ☒ Claim(s) 35 and 36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Amendment filed on 05/05/2005 has been entered and made of record as Paper No. 05-05. Claims 1-16 and 21-38 are pending in the application.

Applicant's remarks have been considered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-16 and 21-29, 31-34 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qian et al., (US Patent No. 6,447,636 hereinafter "Qian") in view of Subramani et al., (US Patent No. 6,254,746 hereinafter "Subramani").

Regarding claims 1, 24, 25, 27, 28, 31, 32 and 37, Qian teaches an apparatus for semiconductor processing, the apparatus comprising: a process chamber 101; a solid state RF plasma generator 105 coupled to the process chamber 101 to excite a process gas and generate a plasma; a controller 140 coupled to the solid state RF plasma generator 105 to pulse the solid state radio frequency plasma generator for each deposited layer, and a stacked cylindrical helical ribbon electrode 102 coupled to an output of the solid state radio frequency plasma generator 105 (col. 3, line 45 through col. 4, line 9, and Figs. 1-4).

Qian fails to teach each ribbon coil having a width and a thickness, the width being greater than the thickness, the width being substantially perpendicular to the thickness, and the width being in a dimension facing an adjacent coil.

However, Subramani teaches wherein each ribbon coil 104 having a width and a thickness, the width (2 inches) being greater than the thickness (1/16 inch), the width being substantially perpendicular to the thickness, and the width being in a dimension facing an adjacent coil (col. 9, line 65 through col. 10, line 5, and Fig. 5). Since Qian and Subramani are all from the same field of endeavor, the purpose disclosed by Subramani would have been recognized in the pertinent art of Qian. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to provide the ribbon coil having the width being greater than the thickness in order to improve deposition uniformity on the substrate as taught by Subramani, column 13, lines 15-24. Also regarding claim 32, Qian fails to teach wherein the distance between the helical electrode and a workpiece is less than five inches. However, Subramani teaches wherein wherein the distance between the helical electrode 104 and a workpiece is less than five inches (col. 10, lines 37-40). Since Qian and Subramani are all from the same field of endeavor, the purpose disclosed by Subramani would have been recognized in the pertinent art of Qian. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to provide the ribbon coil having the width being greater than the thickness in order to improve deposition uniformity on the substrate as taught by Subramani, column 13, lines 15-24.

Regarding claims 2-9, 12-16, 21-23, 33 and 34, Qian teach the ribbon coil 102 is external to the process chamber 101; the dielectric wall 103 is a flat plate, tube or concave or projects through a center of the ribbon coil 102, the helical ribbon electrode 102C further comprises a cylindrical helix that forms a plurality of spiral turns in different planes (Fig. 4C).

Regarding claims 10 and 11, Qian fails to teach wherein the distance between the helical electrode and a workpiece is less than five inches.

However, Subramani teaches wherein wherein the distance between the helical electrode 104 and a workpiece is less than five inches (col. 10, lines 37-40). Since Qian and Subramani are all from the same field of endeavor, the purpose disclosed by Subramani would have been recognized in the pertinent art of Qian. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to provide the ribbon coil having the width being greater than the thickness in order to improve deposition uniformity on the substrate as taught by Subramani, column 13, lines 15-24.

Regarding claims 26 and 29, Qian fails to teach wherein the ratio of the thickness to the width ranges up to 1:10,000.

However, Subramani teaches wherein wherein the ratio of the thickness to the width ranges up to 1:32 (col. 10, lines 3-5). Since Qian and Subramani are all from the same field of endeavor, the purpose disclosed by Subramani would have been

recognized in the pertinent art of Qian. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to provide the ribbon coil having the width being greater than the thickness in order to improve deposition uniformity on the substrate as taught by Subramani, column 13, lines 15-24. Although Subramani's ratio range (1:32 is not the claimed range (1:10,000), this does not define patentable over Qian in view of Subramani since it has been held where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. In re Aller, 105 USPQ 233.

Allowable Subject Matter

4. Claims 30, and 38 are allowed.
5. Claims 35 and 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. The following is a statement of reasons for the indication of allowable subject matter: Claim 35 recite, inter alia, the a sheet of dielectric material separates adjacent said spirally-connected ribbon-shaped coils so that, when compressed, the adjacent surfaces of the spirally-connected ribbon-shaped coils do not touch. The art of record does not disclose or anticipate the limitation in combination with other claim element nor would it be obvious to modify the art of record so as to form a device including the above limitation.
7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quoc Hoang whose telephone number is (571) 272-1780. The examiner can normally be reached on Monday-Friday from 8.00 AM to 5.00 PM.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone numbers of

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the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


Quoc Hoang
Patent examiner/AU 2818.


David Nelms
Supervisory Patent Examiner
Technology Center 2800